AMENDMENTS TO THE SPECIFICATION

Please delete the paragraph beginning at page 5, line 1.

~~This object is achieved by the method as described in claim 1. Furthermore, the invention is embodied in an analysis entity as described in claim 20 and a computer program loadable into a processing unit of an analysis entity as described in claim 22. Advantageous embodiments are described in the further claims.~~

Please replace the paragraph beginning at page 4, line 20, with the following rewritten paragraph:

In summary, existing solutions for obtaining information about a transmission capability of a transmission link are ~~not~~ difficult to implement, are slow, or provide insufficient information.

Please replace the paragraph beginning at page 5, line 16, with the following rewritten paragraph:

An analysis entity is utilized for the demanded obtaining of the information about the transmission capability of the transmission link. The analysis entity obtains the sending rate, e.g. based on sending rate related information representing to the analysis entity information related to the sending rate from which the analysis entity can obtain, e.g. calculate, the sending rate or by explicit signaling of the sending rate to the analysis entity. The obtained sending rate can be identical to the sending rate, however, in a real system with delays and jitter, the obtained sending rate may deviate to a certain extend from the sending rate. In any case, the obtained sending ~~receiving~~ rate is such that the analysis entity can conclude to the sending rate with the rate modulation at which the data packets are sent from the sending entity to the transmission link.

Please replace the paragraph beginning at page 5, line 28, with the following rewritten paragraph:

The analysis entity obtains also the receiving rate, e.g. based on receiving rate related information representing to the analysis entity information related to the receiving rate from which the analysis entity can calculate the obtained receiving rate representing to the analysis entity the receiving rate or by explicit signaling of the receiving rate to the analysis entity. Similarly, the obtained receiving rate can be identical to the receiving rate or may deviate ~~form~~ from the receiving rate. In any case, the obtained receiving rate is such that the analysis entity can conclude to the receiving rate at which the data packets are received at the receiving entity.

Please replace the paragraph beginning at page 7, line 10, with the following rewritten paragraph:

The method achieves the object of obtaining of extended information about the transmission capability of a transmission link in an easy way at an early stage. The method is based on the obtaining and processing of the sending rate and the receiving rate and does not rely on the detection of data packet drops. Therefore, the obtaining of the information about the transmission capability of the transmission link can be achieved at a much earlier stage compared to packet-drop-solutions. Furthermore, the proposed method gains the information about the transmission capability from the relation of the sending rate and the receiving rate and by a determination of the appearance of the rate modulation of the sending rate in the receiving rate which allows the analysis entity to obtain extended information about the transmission not restricted to statements like buffer overflow detected and transmission rate below the sending rate as it is provided in solutions based on packet drops. The present invention does not require the signaling of a transmission rate as in network-feedback solutions. Instead, as stated already before, the present method relies on the obtaining of the sending rate and the receiving rate which can be achieved [[in]] easily in multiple ways especially in systems that underlay standardization. In addition, the present method does not

explicitly stipulate a certain way [[of]] for the obtaining of the sending and receiving rate such that one could select most suited ways for obtaining the respective rates, depending on different situations or systems, which enhances the flexibility of the proposed method and supports further the implementation.

Please replace the paragraph beginning at page 8, line 7, with the following rewritten paragraph:

According to another preferred embodiment, the obtained receiving rate is separated into a fraction having the rate modulation and a fraction having not the rate modulation. The obtained receiving rate is separated into a fraction having the rate modulation and a fraction having not the rate modulation. Furthermore, the fraction of the sending rate having not the rate modulation is compared to the fraction of the receiving rate having not the rate modulation to determine the relation and the fraction of the receiving rate having the rate modulation is analyzed for the determining of the appearance of the rate modulation. The separation of a rate into a fraction having the rate modulation ~~rate~~ and a fraction having not the modulation rate can be e.g. achieved by filtering.

Please replace the paragraphs beginning at page 15, line 1, with the following rewritten paragraph:

According to another preferred embodiment, the one or more further sending rates are not modulated with the rate modulation and the sending entity effects the rate modulation of the new sending rate. Usually sending rates are unmodulated. Therefore, interposing a sending entity effecting the rate modulation between the further sending entity and the transmission link eases the implementation as no rate modulation functionality has to be necessarily implemented in the further entity. Furthermore, modulating the new sending rate enables the analysis entity to continuatively apply the method for the obtaining of the transmission capability according to the present invention on the base of the new sending rate. The rate modulation ~~rate~~ on the new sending rate does not necessarily have to be identical to the rate modulation ~~rate~~ on the

sending rate that has been previously used, e.g. when changing to the new sending rate or later in the procedure, the rate modulation ~~rate~~ on the new sending rate may be adjusted according to the obtained information about the transmission capability and/or pre-known transmission capabilities.

Please replace the paragraphs beginning at page 17, line 4, with the following rewritten paragraph:

A computer program loadable into a processing unit of an analysis entity for obtaining a transmission capability of a transmission link in a communication system where in data packets are sent from a sending entity at a sending rate being modulated with a rate modulation to the transmission link which transmits the data packets according to its transmission capability to a receiving entity receiving the data packets at a receiving rate, the computer program comprising code to obtain the sending rate and the receiving ~~sending~~ rate, to compare the obtained sending rate and the obtained receiving rate to determine a relation of the obtained sending rate and the obtained receiving rate and to determine an appearance of the rate modulation of the sending rate in the obtained receiving rate, and to obtain the information about the transmission capability based on the relation and the appearance of the rate modulation.

Please replace the paragraph beginning at page 19, line 7, with the following rewritten paragraph:

At the receiving entity RE, the sent data packets DP1-DP4,...,DPk-DPn,... are received and processed P1-P4,..,Pk-Pn,..., e.g. according to an application on the receiving entity RE like a streaming multimedia presentation. At certain points in time, the receiving entity generates GR2,GR4,...,GRl,GRn,... receiver reports for indicating to the analysis entity AE the amount of data received. According to the present example, the receiving entity RE ~~AE~~ generates receiver reports every time two of the data packets are received. The receiving entity determines the most progressed sequence number of the received data packets available at the time of generation of each receiver report and

includes this sequence number into the corresponding receiver report. e.g. the receiver report generated at step GR4 includes the sequence number of the data packet DP4 which is 4 according to the present example and being the most progressed sequence number available at the moment of the generation GR4 of the receiver report. After the generation of a receiver report, the receiving entity RE sends said receiving report preferably immediately to the analysis entity AE. The sent RR2,RR4,...,RRl,RRn,... receiver reports are received at the analysis entity AE according to the sequence of the sending. The analysis entity AE determines PR2,PR4,...,PRl,PRn,... the receiving time for each received receiver report and the respective included sequence number, i.e. 2,4,...l,n... according to the present example, as receiving rate related information.

Please replace the table beginning at page 21, line 3, with the following amended table:

Included Sequence Number	Receiving Time
2	tr(2) ~~Tr(2)~~
4	tr(4) ~~Tr(4)~~
.	.
.	.
L	tr(1) ~~Tr(l)~~
N	tr(n) ~~Tr(m)~~
.	.
.	.

Please replace the paragraph beginning at page 4, line 20, with the following rewritten paragraph:

Based on the obtained sending rate related data information, the analysis entity can calculate the sending rate. For example it can use the formula $Rs(l,k) = (SN(l)-SN(k)) / (ts(l)-ts(k)) = \Delta SN(l,k) / \Delta ts(l,k)$ to calculate a packet rate with SN(l) and SN(k) being sequence numbers l and k associated to the sent data packets resulting in the obtained packet sending rate for the data packets DPl and DPK [[DPl]].

Please replace the paragraph beginning at page 4, line 20, with the following rewritten paragraph:

Similarly, the receiving rate Rr can be calculated from the obtained receiving rate related information by using the formula $Rr(n,l) = (SNr(n)-SNr(l)) / tr(n)-tr(l)$ ~~$(ts(n)-ts(l))$~~ $= \Delta SNr(n,l) / \Delta tr(n,l)$ giving a packet rate with SN(n) and SN(l) being included sequence numbers n and l as provided by the receiving entity RE. Other ways of calculating the sending rate and the receiving rate are possible.

Please replace the paragraph beginning at page 25, line 21, with the following rewritten paragraph:

In Fig. 3d), the modulated sending rate SSR is below the transmission rate and the buffer is empty which results in that the rate modulation according to the modulated sending rate SSR is visible in the obtained receiving rate RR3. In Fig. 3c), the obtained receiving ~~sending~~ rate RR2 is below the average sending rate ASR which indicates that the transmission rate is lower than the average sending rate ASR. In Fig. 3b), the transmission rate is equal to the average sending rate ASR and the rate modulation amplitude and rate change frequency have been chosen such that the buffer is always partly filled. This results in that the fractions of the rate modulation undershooting the transmission rate are not visible in the obtained receiving rate RR1 ~~RR2~~, because the buffer compensates the rate modulation unless the buffer is empty. If the buffer is not empty, the inflow of data packets into the buffer installed before the part of the

transmission link that defines the transmission rate in average occurs at the modulated sending rate SSR and the outflow occurs at the average sending rate ASR. If the buffer is empty, the outflow of the data packets occurs – as mentioned above – at the scheduled sending rate SSR.

Please replace the paragraph beginning at page 26, line 7, with the following rewritten paragraph:

Thus, from the comparing of the modulated sending rate SSR and the obtained receiving rates RR1,RR2,RR3, a relation between both rates can be obtained. According to the present example, the offset rate value between the average sending rate ASR and the receiving rate RR1,RR2,RR3 represents the relation. The obtained receiving rate RR2 has negative offset rate value to the average sending rate ASR which indicates that the transmission rate is lower than the sending rate. The offset value is zero between the average sending rate ASR and the obtained receiving rates RR!,RR3 ~~RR1,RR2~~ indicating that the transmission rate is equal to or above the sending ~~transmission~~ rate.

Please replace the paragraph beginning at page 26, line 17, with the following rewritten paragraph:

The determination of an appearance of the rate modulation in the obtained receiving rate can be achieved by analyzing the temporal evolution of the obtained receiving rate. The obtained receiving rate RR3 reveals the rate modulation ~~rate~~ indicating that the transmission rate is above the sending rate and the buffer is empty. The receiving rates RR1,RR2 do not reveal any rate modulation corresponding to the rate modulation of the sending rate indicating in conjunction with the respective determined relations, that the transmission rate is below the sending rate and the buffer is subsequently filled according to the example for Fig. 3c) and the transmission rate is equal to the sending rate and the buffer is partly filled according to the example for Fig. 3b)

Please replace the paragraph beginning at page 26, line 28, with the following rewritten paragraph:

Absolute values for the transmission capability can be also determined, e.g. by comparing the average value for the obtained sending rate to the average value of the obtained receiving rate for the case that the transmission rate is below the sending rate. The modulated sending rate ASR ~~SSR~~, i.e. the average sending rate SSR and/or the modulation rate, can be adjusted to the transmission capability in order to detect absolute values for the transmission capabilities. Consideration of pre-known values for the transmission capability can enhance the speed and accuracy of the obtaining of the information about the transmission capability according to the invention, e.g. if the transmission link has three possible transmission rates with three pre-known rate values T1, T2, and T3 with T1<T2<T3 and the analysis entity obtains from the comparison that the obtained receiving rate has a modulation rate according to the modulation rate of the sending rate and the obtained average receiving rate is equal to the obtained average sending rate at the second rate value T2, the sending entity can directly conclude that the current transmission rate must be the third transmission rate with the rate value T3.

Please replace the paragraph beginning at page 27, line 22, with the following rewritten paragraph:

Fig. 4 illustrates a second example for rate curves over time according to the present invention. Depicted in the upper part of Fig. 4 ~~Fig. 2~~ are the modulated sending rate SR at which the data packets are sent from the sending entity into the transmission link, the transmission rate TR of the transmission link, the obtained sending rate OSR as obtained by the analysis entity, the obtained receiving rate ORR as obtained by the analysis entity and in the lower part a compared rate curve CR which is created by the difference of the obtained sending rate OSR and the obtained receiving rate ORR over time.

Please replace the paragraph beginning at page 28, line 1, with the following rewritten paragraph:

The obtained sending rate can differ from the sending rate as illustrated in Fig. 4. Here, the sending rate is obtained based on sending rate related information derived from sender reports, e.g. comprising each a sending time and a sequence number of a sent data packet, which can effect a slight degradation of the peak-like rectangular rate modulation of the sending rate SR in the obtained sending rate OSR at the analysis entity. However, the rate modulation of the obtained sending rate OSR can be clearly resolved by the analysis entity. Similarly, the obtained receiving rate ORR ~~OSR~~ can be degraded due to the obtaining process.

Please replace the paragraph beginning at page 4, line 20, with the following rewritten paragraph:

The four entities ~~SE,TL,RE,SE~~ SE, FSE, RE, AE can be located on a common platform, e.g. in a single housing, or could be partly or totally separated. A preferred implementation is shown in Fig. 6 for a streaming application for a communication network according to the UMTS standard. The system comprises a streaming server acting as further sending entity, a streaming proxy NIN, acting as sending entity and analysis entity, and a transmission link comprising a (3rd Generation Gateway GPRS (General Packet Radio Service) Support Node) 3G-GGSN connected via a Gn interface to a (3rd Generation GPRS Support Node) 3G-SGSN connected via a Iu interface to a (Radio Network Controller) RNC comprising a RNC queue acting as buffer connected further via a wireless interface to a (3rd Generation Partnership Project) 3GPP compliant user equipment and further to the 3GPP streaming client acting as receiving entity. In such a system, the wireless link is typically the bottleneck link which can be operated at different transmission rates, e.g. at a low rate (e.g. 32 kBit/sec) and a high rate (e.g. 64 kBit/sec). Furthermore, the wireless link can be realized as an elastic bearer with the radio resource management switching the transmission rate of the wireless link during a streaming session.